

REMARKS

Favorable reconsideration of this application, in view of the present amendment and in light of the following discussion, is respectfully requested.

Claims 1-40 are currently pending. Claims 1, 11, 21, and 31 have been amended by the present amendment. The changes to the claims are supported by the originally filed specification and do not add new matter.

In the outstanding Office Action, Claims 1-3, 5, 11-13, 15, 21-23, 25, 31-33, and 35 were rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese Patent No. JP 362126668A to Hiramoto et al. (hereinafter “the ‘668 patent”); Claims 4, 14, 24, and 34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘668 patent in view of U.S. Patent No. 6,291,865 to Lee (hereinafter “the ‘865 patent”); and Claims 6-10, 16-20, 26-30, and 36-40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the ‘668 patent in view of U.S. Patent No. 6,262,439 to Takeuchi et al. (hereinafter “the ‘439 patent”).¹

Applicants wish to thank the Examiner for the personal interview granted Applicants' representatives on May 25, 2004, at which time a proposed amendment to Claim 1 was discussed. At the conclusion of the interview, the Examiner indicated that the proposed amendment would overcome the outstanding rejection of the claims, pending the Examiner's further consideration of the claims upon formal submission of a response to the outstanding Office Action.

Amended Claim 1 is directed to a power semiconductor device, comprising: (1) a base layer of a first conductivity type; (2) a base layer of a second conductivity type selectively formed on one surface of the base layer of the first conductivity type; (3) an emitter layer of

¹ Applicants note that Claim 9, which depends from Claim 4, was not rejected over a combination of references that includes the ‘865 patent, which was applied in the rejection of Claim 4. Moreover, in the rejection of Claim 9, the Office Action fails to make clear whether the limitations recited in Claim 4 are also taught by the ‘439 patent. The same is true of Claims 19, 29, and 39.

the first conductivity type selectively formed on the surface of the base layer of the second conductivity type; (4) a collector layer selectively formed on one of the one surface and another surface of the base layer of the first conductivity type; (5) a first main electrode formed on the collector layer; (6) a second main electrode formed on the emitter layer and on the base layer of the second conductivity type; (7) *a gate insulating film formed on and directly contacting a surface of the base layer of the second conductivity type that lies between the emitter layer and the base layer of the first conductivity type, the gate insulating film including the first insulating portion and a second insulating portion*; and (8) a gate electrode formed above the first and second insulating portions, wherein a capacitance of a capacitor formed of the first insulating portion is smaller than a capacitance of a capacitor formed of the first insulating portion. Claim 1 has been amended to clarify that the gate insulating film directly contacts a surface of the base layer of the second conductivity type. The changes to Claim 1 are supported by the originally filed specification and does not add new matter.²

Applicants respectfully submit that the rejection of Claim 1 (and dependent Claims 2, 3, and 5) is rendered moot by the present amendment to Claim 1.

The '668 patent is directed to a semiconductor device having a thin oxide film layer 3 formed on a second conductivity type (p-type) base region located beneath a gate electrode. However, Applicants respectfully submit that the '668 patent fails to disclose a gate insulating film formed on and directly contacting a surface of a base layer of a second conductivity type that lies between an emitter layer and the base layer of the first conductivity type, wherein the gate insulating film includes a first insulating portion and a second insulating portion and the capacitance of the second insulating portion is smaller than the capacitance of the first insulating portion, as recited in amended Claim 1. Rather, the '668

² See, e.g., Figure 1.

patent merely discloses a thin oxide film layer 3 formed on a second conductivity type base region and located beneath a gate electrode. Accordingly, Applicants respectfully submit that Claim 1 (and dependent Claims 2, 3, and 5) patentably define over the '668 patent.

Independent Claims 11, 21, and 31 recite limitations analogous to the limitations recited in Claim 1. Moreover, Claims 11, 21, and 31 have been amended in a manner analogous to the amendment to Claim 1. Accordingly, for the reasons stated above for the patentability of Claim 1, Applicants respectfully submit that the rejections of Claim 11 (and dependent Claims 12, 13, and 15), Claim 21 (and dependent Claims 22, 23, and 25), and Claim 31 (and dependent Claims 32, 33, and 35) are rendered moot by the present amendment to Claims 11, 21, and 31.

Regarding the rejection of the remaining dependent claims under 35 U.S.C. § 103, Applicants respectfully submit that the '865 and '439 patents fail to remedy the deficiencies of the '668 patent with respect to the gate insulating film, as discussed above. Accordingly, Applicants respectfully submit that the rejections of dependent Claims 4, 6-10, 14, 16-20, 24, 26-30, 34, and 36-40 are rendered moot by the present amendment to independent Claims 1, 11, 21, and 31.

Thus, it is respectfully submitted that independent Claims 1, 11, 21, and 31 (and all associated dependent claims) patentably define over any proper combination of the '668, '865, and '439 patents.

Consequently, in view of the present amendment and in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

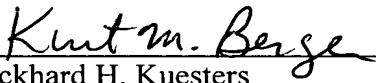
Respectfully submitted,

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